20th Street and Factor Avenue

Boundaries:

The site is located approximately one-half mile south of 16th Street (U.S. Highway 95) and approximately three-quarters of a mile east of Fourth Avenue (Interstate 8 Business Loop) in Yuma, Arizona.

Site History:

- In 1966, Houston Photo Products (HPP) began operating its motion picture laboratory and manufacturing photographic equipment. In 1988, HPP changed its name to Houston International, Limited (HIL). Historically, HPP and HIL were engaged in two operations: HPP/HIL operated a motion picture laboratory and a manufacturing facility for the manufacture of photographic film and paper processing equipment for the photo industry. The chemicals used at the facility include standard photographic chemicals, namely tetrachloroethylene (PCE) and small amounts of various other chemicals. The motion picture laboratory utilized varying amounts of photographic chemicals and water. The wastewater from this process was treated to recover silver. The treated wastewater was disposed in the following three ways: 1) some of the wastewater was discharged to a 1,000-gallon concrete underground sump on the east side of the property. When this sump was full, it was discharged to a disposal pond on the east side of the property. Wastewater from this disposal pond overflowed onto the adjacent property to the east of the site. 2) Wastewater was used to water plants in landscaped areas at the front of the building. 3) Wastewater was discharged to the ground in the southwest portion of the property by a sprinkler system and later to a sump. From 1975 until the early 1990s, HPP/HIL used PCE to clean stainless steel machine parts. On one occasion in 1978, PCE was discharged to the 1,000-gallon concrete underground tank. In 1991, HIL began to use Industroclean (which contains ethylene glycol monobutyl ether) in place of PCE.

- HIL reported a leaking tank to the Arizona Department of Environmental Quality (ADEQ) Underground Storage Tanks (UST) Section in 1990. The ADEQ UST Section referred the facility to the ADEQ Water Pollution Compliance Unit. Consultants for HIL conducted soil and groundwater investigations under the oversight of the Water Pollution Compliance Unit. In 1993, the ADEQ Hazardous Waste Section (HWS) inspected the facility, and in 1994, HIL and the ADEQ HWS entered into a compliance order. Consultants for HIL conducted additional soil and groundwater investigations under the compliance order.

- From 1990 to 1994, consultants for HIL conducted soil and soil vapor investigations at the facility. In 1990, PCE and metals were detected in onsite soils. Subsequent soil investigations indicated that PCE is present in soil at a maximum concentration of 140 micrograms per kilogram (µg/kg), which is below the minimum Groundwater Protection Level (GPL) of 1,300 µg/kg as well as the Arizona Residential Soil Remediation Levels (SRL) of 53,000 µg/kg. Toluene, xylenes, and chloroform have also been detected in soil at concentrations below the minimum GPLs. Several metals are present and in soil at concentrations below the rSRLs. In 1994, a soil vapor survey was conducted. PCE was present in soil vapor at a maximum concentration of 52,000 micrograms per liter (µg/l.) Trichloroethylene (TCE) and 1,1,1-trichloroethane (1,1,1-TCA) were also detected in soil vapor samples.
- In 1992 and 1993, consultants for HIL installed three groundwater monitoring wells (MW-1, MW-2,

and MW-3). Three rounds of groundwater sampling were conducted in 1993. The PCE concentrations ranged from 5,000 to 270,000 µg/l, which exceed the Arizona Aquifer Water Quality Standard (AWQS) for PCE of 5.0 µg/l. An upgradient monitoring well (MW-101) was installed east of the facility in 1996. Results of the 1996 sampling indicated that the PCE concentration in the upgradient well were 5.2 µg/l and the PCE concentrations in the original three groundwater monitoring wells ranged from 150 to 3,000 µg/l. A nested groundwater monitoring well (MW-102) was installed in 1996. MW -102 has three screened intervals, 80 to 90 feet, 110 to 120 feet and 140 to 150 feet below ground surface (bgs). The maximum PCE concentration detected was 520 µg/l in the deepest screened interval.

- In 1994 or 1995, HIL moved its motion picture laboratory operation offsite. The facility is currently occupied by the offices of Houston Film Labs and a dance studio. These operations do not generate wastewater.

- In 1998, the ADEQ Hazardous Waste Section referred the facility to the ADEQ Superfund Programs Section, Site Assessment Unit. The site was placed on the WQARF Registry in March 2000 with a score of 31 out of a possible 120.

- In June 2001, ADEQ began site investigation activities at the facility. A review of the Material Safety Data Sheets of the chemicals used at the facility indicated that two cyanide compounds, potassium ferricyanide and sodium thiocyanate, were also used at the facility. Analyses of wastewater in the septic systems indicated cyanide concentrations as high as 20 milligrams per liter (mg/l) were present in the wastewater disposal system. Cyanide is present in the groundwater at concentrations ranging from 0.1 to 8.76 mg/l in monitor wells at the site. The AWQS for cyanide is 0.2 mg/l.

- In October 2001, ADEQ completed the characterization of cyanide contaminated soils at the site. Both of the cyanide compounds used at the facility can degrade to hydrogen cyanide in sunlight or in an environment with a near neutral pH. Several areas on the site exceed the non-residential SRL of 35 mg/kg for hydrogen cyanide

- In June 2002, ADEQ completed an early response action (ERA) at the site. The ERA included excavation and disposal of the upper foot of cyanide contaminated surface soils. Approximately 1,700 tons of contaminated soils were removed from the site. A one foot cap of aggregate base course material was placed over the remaining cyanide contaminated soils. This stable cap will prevent direct exposure to the underlying contaminated soils remaining at the site. The ERA also included the removal of two unused sumps and the cleaning of three active septic systems at the site. The removal of approximately 15,000 gallons of PCE and cyanide contaminated wastewater and sludge from the disposal system addressed the continuing sources of groundwater contamination by removing the remaining source material.

- In December 2003 soil and soil vapor samples were collected from six borings at the site. Samples were collected every 10 feet to a depth of 70 feet below ground surface to evaluate the vertical extent of PCE contamination at the site. Sampling results indicate the concentrations of PCE remaining in the soil or soil vapor do not exceed any regulatory standards.
- In early 2004, ADEQ collected indoor air data from the buildings on the property and one building

adjacent to the property. This data was collected as part of an ongoing risk assessment for the indoor air at the site.

- In 2004, ADEQ drilled and sampled four deep borings beneath two of the remaining septic tanks and the former disposal pond area. The purpose of these boring was to evaluate the cyanide contamination at depth in these areas. Cyanide contamination above the non-residential SRL extends to a depth of approximately 17 feet bgs in some areas of the site. ADEQ will use this data and other information to develop GPLs for the cyanide contaminated soils remaining in place.

- Also in 2004, ADEQ drilled and sampled two deep groundwater monitoring wells at the site. One well, MW- 103, was installed near the location of the former sump on the east side of the property. An additional monitor well, MW-104, was installed on the down gradient end of the property. Both monitor wells are nested monitor wells with screened intervals from 150 to 170 feet and 220 to 240 feet bgs. Analysis of groundwater samples from these deep wells do not indicate PCE or cyanide contamination above an AQWS.

- In 2005, ADEQ drilled and sampled four monitor wells located from approximately ¼ to ½ mile down gradient of the site. Analysis of groundwater samples indicate PCE is present in one well with concentrations as high as 190 µg/l. TCE is also present at concentrations as high as 88 µg/l. Cyanide was also detected at a concentration of 0.22 mg/l. The groundwater contamination plume is defined as extending approximately ½ mile down gradient of the site.

Site Status:

ADEQ's current plans for the site are to continue the Remedial Investigation (RI). During the RI, ADEQ plans to fully determine the extent of groundwater contamination down gradient of the site. The site will then proceed through a feasibility study leading to a proposed remedial action plan and a final remedy.

Site Hydrogeology:

- The Yuma area is underlain by thick sequences of nonmarine and marine sedimentary rocks. However, only the upper several hundred feet of these sediments are hydrologically important. This is because the upper layers are extremely transmissive and yield sufficient quantities of water to wells. From lowest to uppermost, the upper layers are described as the wedge zone, the coarse gravel zone, and the upper fine-grained zone. The wedge zone overlies the marine sedimentary Bouse formation and consists of interbedded sands, gravels and cobbles. The wedge zone is approximately 2,500 feet thick in the area pinching out against the basin bounding ranges. The coarse gravel zone overlies the wedge zone, varying from zero to 100 feet in thickness. The coarse gravel zone consists of fluvial deposits of coarse gravels, including cobbles and boulder size material. The coarse gravel zone is the principle aquifer for the Yuma area. The coarse gravel zone is generally found at a depth of 100 feet in the low lying valley areas and at a depth of about 180 feet below the Yuma Mesa where the site is located. The coarse gravel zone is not present beneath the site. The upper fine-grained zone is the uppermost saturated unit which overlies the coarse gravel zone. The upper fine-grained zone is up to 200 feet thick and characterized as sands and silts and may have an extensive clay layer which can locally affect groundwater movement.

- Depth to groundwater at the site is approximately 75 feet groundwater flow direction at the site is to the northwest.

Contaminants:

The current contaminants of concern at the site include PCE, TCE and cyanide. Contaminants of concern at the site may change as new data become available.

Public Health Impact:

No irrigation, drinking water or other production wells have been impacted by the volatile organic compounds or cyanide contamination from the site. However, PCE, TCE and cyanide are present in the groundwater monitoring wells at the site at concentrations above the AWQS. The cap prevents direct exposure to the underlying cyanide contaminated soils remaining at the site.

Community Involvement Activities:

A community advisory board will be formed when a remedial investigation is initiated at the site. A fact sheet was distributed to the community involvement area in March 2002.

Information Repositories:

Interested parties can review site information at the ADEQ main office located at 1110 West Washington Street, Phoenix. With 24 hour notice, an appointment to review relating documentation is available Monday through Friday from 8:30 a.m. to 4:30 p.m., at the ADEQ Records Management Center, 1110 W. Washington Street in Phoenix, Arizona. Please contact (602) 771-4380 or (800) 234-5677 to schedule an appointment to review these documents.

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*In Arizona, but outside the Phoenix area, call toll-free at (800) 234-5677.